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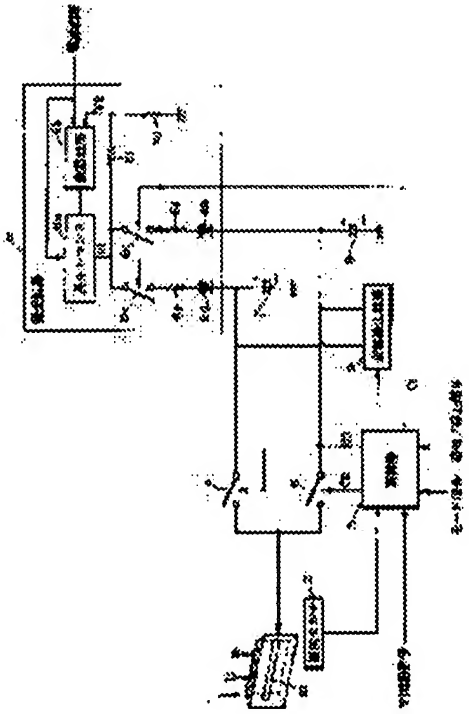
(54) LIGHTING SYSTEM

(57)Abstract:

PROBLEM TO BE SOLVED: To reduce electric power consumption and improve safety for a lighting system serving stroboscopic light and video light.

SOLUTION: A capacitor 7 (for example, 100 μF) for high illuminance in a static picture photograph mode for this lighting system and a capacitor 8 (for example, 10 μF) for low illuminance in an animated picture photograph mode are charged by the output of (for example, 300 V) of a step-up transformer 6a. In the animated picture photograph mode, a control 3 outputs a control signal C2 and turns a switch 5 on/off in synchronization with a vertical synchronization signal, whereby electric charges in the capacitor 8 are discharged to a stroboscopic discharge tube 1c to emit continuous light as video light at low illuminance. In the static picture photograph mode, the control 3 outputs a control signal C3 and turns a switch 4 on in synchronization with a vertical synchronization signal, whereby electric charges in the capacitor 7 are discharged to the stroboscopic discharge tube 1c to emit single light as stroboscopic light at high illuminance.



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* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] This invention aims at reduction of power consumption, and relates to the lighting system which can raise safety while it makes the stroboscope at the time of still picture photography, and the video light at the time of animation photography serve a double purpose in one stroboscope light and attains simplification of photography equipment in more detail about the lighting system used for the photography equipment which unified the camera one apparatus recording device, the camera one apparatus recording device, and the camera.
[0002]
[Description of the Prior Art] Conventionally, in the photography equipment which unified the video camera and the camera, utilizing the stroboscope for photography effectively also to video camera photography is proposed. The example is indicated by JP,6-233180,A and explains an outline based on drawing 5 and drawing 6 . Drawing 5 is drawing which was indicated in this official report and in which showing the appearance of the photography equipment which unified the video camera (camera one apparatus recording device) and the camera, and drawing 6 is drawing explaining stroboscope luminescence actuation of the stroboscope built in photography equipment.
[0003] A lens-barrel for the case with which 31 constitutes equipment, and 32 to hold a lens in drawing 5 , A cassette compartment for 33 to take the video tape used for record playback of video photography in and out, The viewfinder for 34 checking the field angle of a photographic subject at the time of video photography or photography, or displaying video recovery, A control panel for 35 to control record playback of a video tape etc., A back roof for the video tape on which 36 became cassette-like, and 37 to carry out desorption of the photographic film, A dismountable cell for 38 to supply the power used of equipment, the stroboscope light in which 39 makes photography in a dark ambient atmosphere easy, and 40 are the microphones for the voice record at the time of video photography.
[0004] The stroboscope light 39 mentioned above emits light in luminescence actuation of the auto stroboscope circuit of drawing 6 . The photo sensor for receiving the light in which 45 emitted light with the photographic subject and 46 emitted light in the stroboscope light 39 in drawing 6 , The comparator circuit which will generate a stroboscope luminescence stop signal if 47 compares with a predetermined value what integrated with the signal on the strength [optical] from a photo sensor 46, and was converted into the quantity of light and a predetermined value is reached, and 48 The stroboscope luminescence stop signal from a comparator circuit 47, It is the luminescence circuit which makes the stroboscope light 39 emit light with the signal from the system controller which is not illustrated.
[0005] Next, explanation of operation is given. The stroboscope light 39 emits light in a stroboscope flash to a photographic subject 45. The light which emitted light is received with a photo sensor 46, and the received light is outputted to a comparator circuit 47. A comparator circuit 47 integrates with the signal on the strength [optical] from a photo sensor 46, and performs the comparison with the quantity of light converted and converted into the quantity of light, and the predetermined value with which the interior was equipped. And if a stroboscope flashing caution signal is outputted and it becomes

predetermined light income until it becomes predetermined light income, actuation which outputs a stroboscope luminescence stop signal will be performed. It controls by carrying out like this so that the fixed quantity of light always emits light from a stroboscope to a photographic subject 45. A stroboscope flashing caution signal or a stroboscope luminescence stop signal is outputted to the luminescence circuit 48 of the next step.

[0006] The signal from the system controller which is not illustrated is inputted into the luminescence circuit 48, and luminescence actuation is performed in it according to the stroboscope flashing caution signal or stroboscope luminescence stop signal mentioned above. In addition, the signal from a system controller is a signal of the same frequency as a video Vertical Synchronizing signal, or the frequency of an integral multiple, and continuation luminescence of the stroboscope luminescence is carried out synchronizing with the frequency of the integral multiple of a video Vertical Synchronizing signal or a video Vertical Synchronizing signal. In this way, the same effectiveness as a video light is acquired by the stroboscope.

[0007] As mentioned above, there is photography equipment which used the video light at the time of animation photography also [stroboscope / at the time of photography] and which unified the video camera and the camera in one stroboscope light. In addition, explanation of single-engined luminescence of a stroboscope is omitted.

[0008]

[Problem(s) to be Solved by the Invention] In conventional equipment, it is using the video light at the time of animation photography also [stroboscope / at the time of photography] in one stroboscope light, and it becomes unnecessary to have a stroboscope light and a video light separately, and simplification Fig. ****** of equipment is made. Moreover, reduction of power consumption can be aimed at by carrying out continuation luminescence synchronizing with the frequency of the integral multiple of a Vertical Synchronizing signal or a Vertical Synchronizing signal at the time of the use as a video light.

[0009] However, continuation luminescence was carried out synchronizing with the frequency of the integral multiple of the Vertical Synchronizing signal of a video signal, or a Vertical Synchronizing signal, and it could not be called yet reduction of satisfying enough power consumption only by aiming at reduction of power consumption, but there was a problem that the dc-battery piece by power consumption was generated. Moreover, about the temperature rise of the stroboscope light discharge tube by continuation luminescence, it is not coped with and there was a problem that the stroboscope light discharge tube dissolved, by the temperature rise of the discharge tube.

[0010]

[Means for Solving the Problem] The stroboscope light which this invention emits light with the discharge charge of the capacitor which carries out the charge and discharge of the charge, and this capacitor, and irradiates a stroboscope flash at a photographic subject, Synchronizing with the signalling frequency of the integral multiple of a Vertical Synchronizing signal or a Vertical Synchronizing signal, it has single-engined light or the control section which carries out continuation luminescence for a charge means to charge said capacitor, and said stroboscope light. It is a lighting system combining and [at the time of still picture photography], and the video light at the time of animation photography, and is characterized by discharging in the amount of charges from which the amount of discharge charges at the time of said still picture photography and the amount of discharge charges at the time of said animation photography differ.

[0011] furthermore, this invention is charged on the charge electrical potential difference of the same level by said charge means -- ****** -- light is emitted in said stroboscope light with the charge which discharges from a mass capacitor at the capacitor of capacity, and the time of said still picture photography, and it is characterized by having the control section controlled to emit light in said stroboscope light with the charge which discharges from a small capacity capacitor at the time of said animation photography.

[0012] a capacitor with still more nearly single this invention -- ****** -- the charge electrical potential difference of level with the charge means in which an output is possible While controlling said charge means to set said charge electrical potential difference to a high level at the time of said still picture

photography and controlling said charge means to set said charge electrical potential difference to a low at the time of said animation photography It charges on the charge electrical potential difference of a high level at the time of said still picture photography, and is characterized by having the control section which controls said stroboscope light by said single discharge charge of a capacitor charged on the charge electrical potential difference of a low to emit light at the time of said animation photography.
[0013] Furthermore, this invention is characterized by equipping said stroboscope light with the reflecting plate which has a radiation fin.
[0014] Furthermore, this invention is characterized by having the temperature sensor which detects the ambient temperature of the said stroboscope light neighborhood, and the control section which stops luminescence actuation compulsorily based on the temperature detection result of this temperature sensor.
[0015] Furthermore, this invention is characterized by having the temperature sensor which detects the ambient temperature of the said stroboscope light neighborhood, and the control section which carries out adjustable [of said discharge charge] based on the temperature detection result of said temperature sensor.
[0016]
[Embodiment of the Invention] One operation gestalt of this invention is explained below based on drawing 1 thru/or drawing 4 . Drawing and drawing 4 which show the configuration of a different example relevant to the 1st example of this invention in drawing in which drawing showing the configuration of the 1st example of the lighting system with which drawing 1 is used for the photography equipment which unified the camera one apparatus recording device, the camera one apparatus recording device, and the camera of this invention, and drawing 2 show the configuration of the 2nd example of this invention, and drawing 3 are drawing showing the configuration of a different example relevant to the 2nd example of this invention.
[0017] In drawing 1 , the lighting system of the 1st example of this invention is equipped with the stroboscope light 1 which irradiates a stroboscope flash to a photographic subject, reflecting plate 1b which the stroboscope light 1 equips with radiation-fin 1a in addition, and stroboscopic tube 1c at the time of photography of a dark ambient atmosphere. The output signal from the temperature sensor 2 which detects the temperature around the stroboscope light 1 neighborhood, and a temperature sensor 2, the Vertical Synchronizing signal of a video signal (V synchronizing signal), The switch 4 switched with the control signal from a control section 3 and a control section 3 which outputs a control signal to the luminescence circuit which a mode signal, and a flashing caution signal/stop signal are inputted, and is mentioned later, or a switch, a switch 5, the luminescence circuit 6 used as the charge means controlled by the control signal from a control section 3, It has the charge detector 9 which detects the charge condition of the capacitor 7 which is the capacitor which is charged with the output voltage from the luminescence circuit 6, and discharges with a switch 4, the capacitor 8 which is the capacitor which is charged with the output voltage from the luminescence circuit 6, and discharges with a switch 5, and capacitors 7 and 8.
[0018] Moreover, pressure-up transformer 6a to which the luminescence circuit 6 carries out the pressure up of the low battery inputted from the power circuit, Drive circuit 6b which drives the luminescence circuit 6, switch 6c by which an end is connected to the outgoing end of pressure-up transformer 6a, switch 6d, Current-limiting resistance 6e connected to the other end of switch 6c, 6f of current-limiting resistance connected to the switch 6d other end, Diode 6g for antisuckbacks connected to current-limiting resistance 6e, diode 6h for antisuckbacks connected to 6f of current-limiting resistance, It has electrical-potential-difference detection resistance 6j connected to the other end of electrical-potential-difference detection resistance 6i by which an end is connected to the outgoing end of pressure-up transformer 6a, and the other end is connected to drive circuit 6b, and electrical-potential-difference detection resistance 6i.
[0019] Next, explanation of operation is given. First, if an electric power switch (not shown) is turned on, the low battery of 7.2V will be inputted into the luminescence circuit 6 from a power circuit, and it will be inputted into the upstream of pressure-up transformer 6a, and drive circuit 6b. Moreover, a

control signal C1 is outputted from a control section 3, and it becomes ON switch 6c and switch 6d. Pressure-up transformer 6a is driven in drive circuit 6b, and outputs the electrical potential difference V1 which carried out the pressure up to the output of a secondary. The outputted electrical potential difference is fed back to drive circuit 6b while it is outputted to switch 6c and switch 6d.

[0020] Feedback voltage V2 is determined by output voltage V1 and the electrical-potential-difference detection resistance 6i and 6j, and is set to V2=(6j/6i+6j) xV1. As compared with the reference voltage which equipped the interior with the feedback voltage V2 inputted, drive circuit 6b changes the output voltage V1 of pressure-up transformer 6a, and it is controlled so that the feedback voltage V2 inputted becomes fixed. Here, in this example, it is a setup with pressure-up transformer 6a and the electrical-potential-difference detection resistance 6i and 6j, and output voltage V1 is set as 300V.

[0021] The end of switch 6c is connected to the outgoing end of pressure-up transformer 6a, and the end of current-limiting resistance 6e is connected to the other end of switch 6c. Moreover, a diode 6g [for antisuckbacks] end is connected to the other end of current-limiting resistance 6e, and the capacitor 7 is connected to the other end which is diode 6g for antisuckbacks.

[0022] Furthermore, a switch 6d end is connected to the outgoing end of pressure-up transformer 6a, and the end of 6f of current-limiting resistance is connected to the other end which is switch 6d. Moreover, a diode 6h [for antisuckbacks] end is connected to the other end of 6f of current-limiting resistance, and the capacitor 8 is connected to the other end which is diode 6h for antisuckbacks.

[0023] Here, a capacitor 7 is a capacitor for the high illuminance exposure at the time of the still picture photography mode mentioned later, for example, is 100 micro F in proof-pressure 350V and capacity. Moreover, a capacitor 8 is a capacitor for the low illuminance exposure at the time of the animation photography mode mentioned later, for example, is 10 micro F in proof-pressure 350V and capacity.

[0024] Since switch 6c and switch 6d are turned on by the control signal C1, as for a capacitor 7 and a capacitor 8, charge is started with the output voltage V1 of pressure-up transformer 6a. Moreover, to the plus side of a capacitor 7 and a capacitor 8, the charge detector 9 was connected and the charge condition of a capacitor 7 and a capacitor 8 is detected.

[0025] If it detects soon that charge was completed, the charge detector 9 will output the completion signal of charge to a control section 3. If the completion signal of charge is inputted, a control section 3 outputs a control signal C1, and turns off switch 6c and switch 6d. In addition, the charge detector 9 will detect the charge condition of a capacitor 7, if charge of a capacitor 8 is completed in an automatic switchover. The capacitor 7 and the capacitor 8 are in the charge condition by the above actuation.

[0026] Next, luminescence actuation of the lighting system in the dark ambient atmosphere at the time of photography is explained. First, the mode signal and Vertical Synchronizing signal (V synchronizing signal) which show the photography mode in still picture photography mode or animation photography mode are inputted into a control section 3. In addition, when a mode signal considers animation photography mode as priority and it considers as photography mode, the mode signal in photography mode is inputted automatically.

[0027] First, the luminescence actuation used as a video light at the time of animation photography mode is explained. By actuation of a photography person, if the flashing caution signal which shows the exposure initiation to a photographic subject is inputted into a control section 3, a control signal C2 will be outputted and a control section 3 will switch turning on and off of a switch 5 synchronizing with the signalling frequency of the integral multiple of V synchronizing signal synchronizing with V synchronizing signal inputted at the same time it outputs a control signal C1 and makes switch 6d turn on (switch 6c is off as).

[0028] The charge charged by the capacitor 8 is outputted to the stroboscope light 1, and discharges to stroboscopic tube 1c because a switch 5 turns on. Stroboscopic tube 1c emits light in a stroboscope flash with the charge which discharged. Moreover, in a switch 5 turning off, it is stopped and luminescence suspends discharge. A capacitor 8 repeats charge and discharge at the time of animation photography mode.

[0029] In the stroboscopic tube, 1c carries out continuation luminescence of the stroboscope flash as mentioned above synchronizing with the signalling frequency of the integral multiple of V

synchronizing signal synchronizing with V synchronizing signal at the time of animation photography mode. In addition, an exposure halt to a photographic subject is performed in the stop signal which shows an exposure halt being inputted into a control section 3 by actuation of a photography person, and a control section 3 outputs a control signal C1, and makes switch 6d turn off while it outputs a control signal C2 and turns off a switch 5, if a stop signal is inputted.
[0030]